

EPA's review of the
National Ambient Air Quality Standard
(NAAQS) for Lead (Pb)

January 15, 2008

Current Lead NAAQS

- Issued by EPA in 1978
- 1.5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), not to be exceeded by the maximum arithmetic mean concentration averaged over a calendar quarter

Health and Environmental Impacts

- Lead accumulates in the blood, bones, muscles, and fat.
- Infants and young children are especially sensitive to even low levels of lead.
- Exposure to lead can:
 - Damage organs
 - including the kidneys and the liver
 - Affect the brain and nerves
 - Excessive exposure causes seizures, mental retardation, behavioral disorders, memory problems, and mood changes.
 - Low levels of lead damage and lower IQ.
 - Affect the heart and blood
 - Causes high blood pressure and increases heart disease, especially in men.
 - Affect animals, fish and plants
 - Can damage organs, reproduction system, and growth.

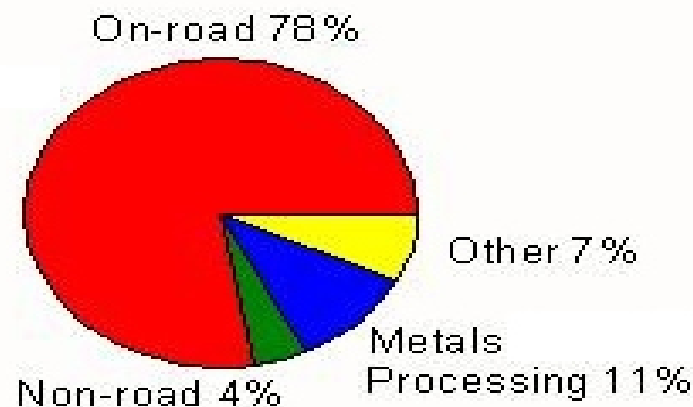
Where does lead come from?

- Metal found naturally in the environment
- Major sources of lead emissions historically have been
 - motor vehicles
 - industrial sources
- Phased-out of gasoline for motor vehicles
- Currently used as a fuel additive for aviation gasoline, but not in commercial jet aircraft
- Can be used in non-road vehicles, such as race vehicles
- Larger industrial sources of lead emissions
 - currently include metals processing, particularly primary and secondary lead smelters
- EPA's lead air quality monitoring strategy generally focuses on areas surrounding these industrial sources.

Lead: Where does it come from?

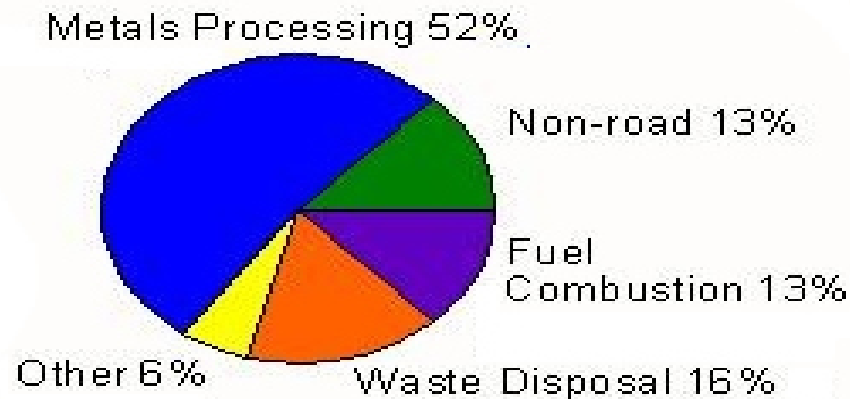
1970 Lead Emissions Sources

221,000 tons



1997 Lead Emissions Sources

3,915 tons



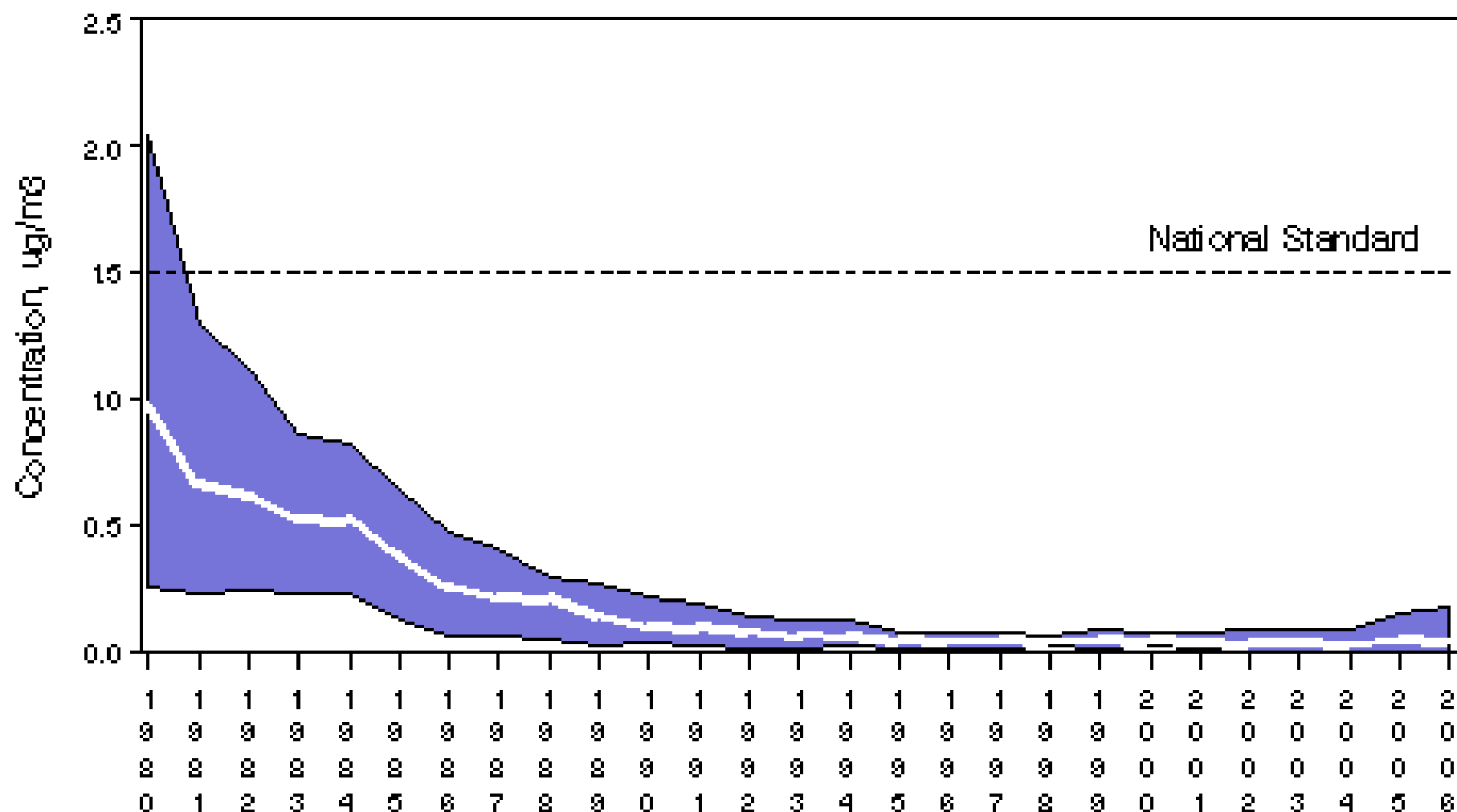
Progress on Reducing Lead

- Transportation sources:
 - Contribute only 13% of lead emissions
 - Emissions from on-road vehicles decreased 99% between 1970 and 1995 due primarily to the use of unleaded gasoline
 - Leaded gasoline in highway vehicles prohibited on December 31, 1995
- Industrial processes:
 - Primary and secondary lead smelters and battery manufacturers responsible for most of lead emissions
 - Emissions have decreased by only 6% since 1988
- Blood lead concentrations for children aged one to five have dropped significantly:
 - From 15 to 2 micrograms per deciliter ($\mu\text{g/dL}$)

Lead Air Quality, 1980 — 2006

(Based on Annual Maximum Quarterly Average)

National Trend based on 15 Sites



1980 to 2006 : 96% decrease in National Average

Current Lead Nonattainment Areas

Only two areas are designated nonattainment for the current lead standard

- East Helena, Montana Area (including Lewis and Clark counties)
- part of Jefferson County in Herculaneum, MO



Lead NAAQS review schedule

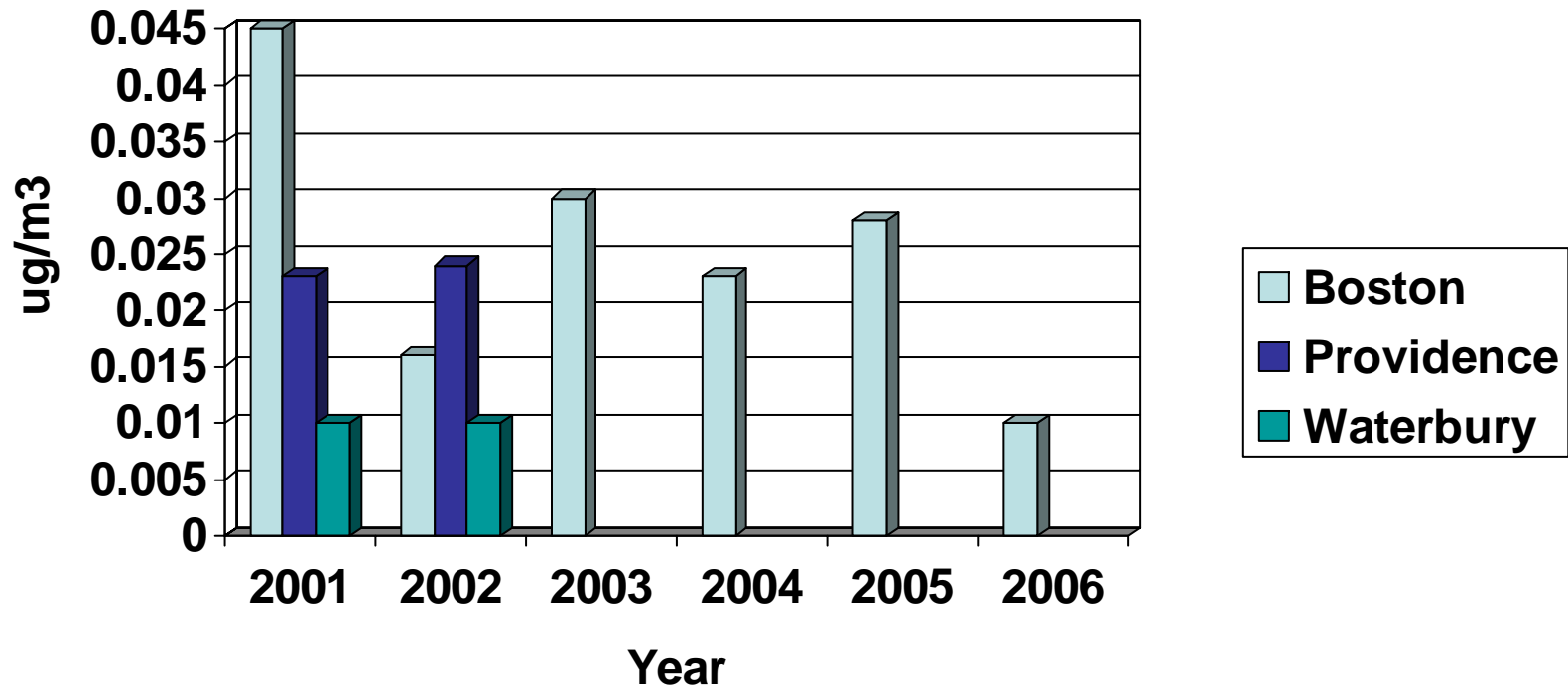
- EPA is required by the Clean Air Act to review all NAAQS every 5 years.
- On November 1, 2007, EPA issued its final staff paper and final Human Exposure and Health Risk Assessment for lead.
- On December 17, 2007, EPA issued an Advanced Notice of Proposed Rulemaking (ANPR).
- Comments on the ANPR due by January 16, 2008.
- EPA is on a court-ordered schedule to:
 - propose a standard by May 1, 2008
 - issue a final rule by September 1, 2008.

EPA Staff Paper Recommendations

- EPA should strengthen the existing $1.5 \mu\text{g}/\text{m}^3$ lead standard to improve public health protection
- Recommended levels range:
 - from $0.1\text{-}0.2 \mu\text{g}/\text{m}^3$
(levels seen in many urban areas throughout the country)
 - to $0.02\text{-}0.05 \mu\text{g}/\text{m}^3$
(the lowest levels considered in the Exposure and Health Risk Assessment)
- EPA should consider revising the averaging time to monthly (or retain the current averaging time of a calendar quarter).

Ambient Lead Levels in New England

Maximum Monthly Pb Concentrations*



* Incomplete data set

For More Information

http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html

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